bibliography of the scientific literature bearing on each excursion. Most of the excursions start late enough to allow members who have been present at the British Association meeting at Dover to attend them, and they all terminate at Berlin in time for the feast of welcome. They are as follows :—

(1) Siebengebirge, Rhine, Eifel, Moselle, from September 19 to 25, under the guidance of Prof. Bonn and Drs. Philippson and Kaiser.

(2) Taunus, Rhine, Nahe, Lahn, from September 21 to 26, conducted by Prof. Sievers, of Giessen.

(3) The Vosges, from September 21 to 25, led by Profs. Gerland and Weigand, starting from Strassburg.

(4) Thuringia, from September 23 to 27, conducted by Profs. Walther and Regel.

(5) The Island of Rügen, from September 22 to 27, starting from Greifswald, led by Profs. Credner, Cohen, and Deecke.

(6) East and West Prussia, starting from Königsberg, and led by Profs. Jentzsch and Conwentz, from September 22 to 27.

(7) Glacial excursions in the North German Plain will be made to Rüdersdorf, near Berlin, on October 1, and from Hamburg along the Baltic shores, from October 7 to 11, under the charge of Prof. Wahnschaffe and Drs. Keilhack and Müller.

All communications as to the Congress or the excursions should be addressed to "The Seventh International Geographical Congress, 90 Zimmerstrasse, Berlin, S.W."

SCIENCE AT THE WOMEN'S INTERNATIONAL CONGRESS.

THE Science Section of the Women's Congress was held at the Small Hall in the Westminster Town Hall on Thursday, June 29, with Mrs. Ayrton in the chair, in the presence of a large and attentive audience. The proceedings were divided into two classes—the work of women in the physical sciences, and the work for women in the biological sciences. Astronomy was represented by Mlle. Klumpke, head of one of the departments at the Paris Observatory; geology by Miss Raisin, of Bedford College; chemistry by Miss Dorothy Marshall, of Girton College; bacteriology by Mrs. Percy Frankland; and botany and zoology by Miss Ethel Sargant. The work already accomplished by women in these various branches of science was dealt with by most of the speakers, as also the openings for women who desire to take up science as a profession. Mrs. Ayrton, in the course of her interesting and able address, pointed out that there was an important outlet for the work of women at the present time in the manufacture of electrical apparatus, the demand for electrical instruments being so great that manufacturers were not able to cope with it, and an opportunity was now offered for women with the necessary education, energy and capital to start a factory for this purpose. The subject of research work was also discussed, and stress was laid upon the fact that, inasmuch as the majority of students who take up science do so either as an avenue to a degree or with the idea of earning a livelihood by teaching later on, their training was as a rule insufficient and quite inadequate to permit them to undertake independent original work; whilst on the other hand the demands upon their time made by teaching was so great as to leave practically no leisure for higher work, even when they were qualified to do it. Until this condition of things is altered, and until more women are attracted towards science for its own sake, and not as a means to an end, the contribution of women in the shape of original work must necessarily be limited. It was highly satisfactory to find that, in the open discussion which followed, an attempt on the part of two speakers to introduce the question of vivisection from the anti-vivisectionist point of view was not tolerated by the audience, these speakers being refused a hearing. It is not too much to say that the papers contributed were worthy both of their subjects and their authors, and that there was a refreshing absence of the hackneyed comparison of the relative position and intellectual powers of men and women, which has been such a favourite theme with so many speakers at this Congress. The next International Congress of Women will be held five years hence in Berlin.

NOTES.

WE notice with much regret the announcement that Sir William H. Flower, K.C.B., F.R.S., late Director of the Natural History Departments of the British Museum, died on Saturday, July 1.

THE Albert Medal of the Society of Arts for the present year has been awarded by the President and Council to Sir William Crookes, F.R.S., "for his extensive and laborious researches in chemistry and in physics, researches which have, in many instances, developed into useful and practical applications in the arts and manufactures." The Swiney Prize, awarded every fifth year for a work on jurisprudence, has been awarded to Dr. Dixon Mann for his book on "Forensic Medicine and Toxicology."

AT the annual meeting of the Société nationale d'Acclimatation de France the Isidore Geoffroy Saint-Hilaire Grand Silver Medal was awarded to Prof. J. Cossar Ewart, of the University of Edinburgh, for his zebra hybrid work, and to Miss Eleanor A. Ormerod for her work in entomology.

PROF. MOISSAN has been elected a foreign member of the German Electro-chemical Society.

THE Premier of Queensland has announced that he intends to ask the Queensland Parliament to grant 1000*l*. in aid of the proposed Antarctic exploration expedition.

A CIVIL List Pension of 60*l*. per annum has been granted to Mrs. Kanthack "in consideration of the eminent services rendered to science by her late husband, Dr. A. A. Kanthack, professor of pathology in Cambridge University."

AT Berlin, on June 27, Prof. Virchow opened the new pathological museum which bears his name and has been built under his superintendence. It has cost about 560,000 marks, and contains a collection of more than 20,000 specimens, collected almost wholly by Prof. Virchow himself, and representing the history of pathology during the past half-century.

WE learn from *Science* that Mr. Secretary Long has appointed a Board of Visitors to examine and report upon the U.S. Naval Observatory, to consist of Mr. Wm. E. Chandler, Mr. Alston G. Dayton, Prof. Geo. C. Comstock, Prof. Geo. E. Hale, and Prof. Edward C. Pickering.

THE prize of 500 guineas, offered by the Sulphate of Ammonia Committee for the best essay on "the utility of sulphate of ammonia in agriculture," has been awarded by the judges—Mr. J. Bowen-Jones, of Shrewsbury, and Dr. J. Augustus Voelcker, of London—to Mr. James Muir, formerly professor at the Royal Agricultural College, Cirencester; subsequently at the Yorkshire College, Leeds; now County Instructor in Agriculture to the Somerset County Council. Seventy-three essays were sent in.

WE learn from the *Lancet* that the Senatus Academicus of the Clark University, Worcester, Massachusetts, which is about to commemorate the anniversary of its foundation, has invited

Prof. Angelo Mosso to deliver a lecture on a subject specially chosen for the occasion, and dealing with a scientific problem of present and universal interest, and Italy, to judge from her leading organs, professional and lay, is deeply sensible of the honour. Prof. Mosso started for the United States on June 20, and has chosen as his theme "I Processi Psichici ed il Movimento" (the Psychic Processes and Movement).

THE death is announced of Mr. Henry Wollaston Blake, F.R.S., at eighty-four years of age. Mr. Blake was an original member of the Institution of Civil Engineers, of the Institution of Mechanical Engineers, and of the British Association. He was elected a Fellow of the Royal Society in 1843.

THE forty-eighth meeting of the American Association for the Advancement of Science will be held at Columbus, Ohio, on August 21-26, under the presidency of Prof. Edward Orton. The first general session will as usual be held on Monday morning, August 21, when the president-elect will be introduced by the retiring president, Prof. F. W. Putnam, and addresses of welcome will be made by the Governor of Ohio and the Mayor of Columbus. The addresses of the vice-presidents will be given on Monday afternoon, and the address of the retiring president in the evening. The several sections will meet as usual during the week, and Saturday will be devoted to an excursion, probably to the mounds at Fort Ancient, the coal mines in Hocking Valley, and the natural-gas fields. Further information may be obtained from the permanent secretary of the Association, Dr. L. O. Howard, Cosmos Club, Washington, D.C., and from the local secretary, Prof. B. F. Thomas, Ohio State University.

THE annual general meeting of the Marine Biological Association was held in the rooms of the Royal Society on June 28. The president, Prof. E. Ray Lankester, F.R.S., occupied the chair. The Council reported that the laboratory at Plymouth continued in a state of efficiency, and was adequately equipped with the most modern requirements for marine biological research. The investigation of the natural history of the mackerel, commenced last year by Mr. Garstang, had been continued, and a report on the variations, races and migrations of this fish had been published. A systematic study of the physical and biological conditions prevailing in the waters at the mouth of the English Channel had also been commenced, which it was hoped would throw light on the causes which determine the movements of migratory fishes. The examination of the fauna and bottom deposits between the Eddystone and Start Point had been concluded by Mr. Allen, the director of the laboratory, and a report on the subject had appeared in the *Journal* of the Association. Seventeen naturalists and eleven students had worked in the laboratory, in addition to the members of the regular staff. The following were elected members of Council for the year:—President, Prof. E. Ray Lankester; hon. treasurer, J. A. Travers; hon. secretary, E. J. Allen; Council, F. E. Beddard, Prof. F. Jeffrey Bell, G. P. Bidder, G. C. Bourne, G. H. Fowler, S. F. Harmer, Prof. W. A. Herdman, Prof. S. J. Hickson, Prof. T. Johnson, J. J. Lister, D. H. Scott, Prof. C. Stewart, Prof. D'Arcy Thompson, Prof. W. F. R. Weldon.

IT is the opinion of many meteorologists that daily telegraphic reports from Iceland would be of inestimable value in weather predictions for Great Britain and northern Europe. The commercial intercourse with Iceland would, however, evidently not pay the interest on the cost of the cable, and it is only quite lately that the Danish meteorologists have received from business men a proposition, already mentioned in these columns, that makes the project seem at all feasible. The proposition is referred to by Prof. Cleveland Abbe in the *Monthly Weather Review*. It is as follows:—The "Grande Compagnie des Télégraphes du Nord," having its centre at Copenhagen, has undertaken to build and to maintain a line from Shetland, touching the Faroe Islands and ending at Iceland, if an annual revenue of 13,500*l.* is guaranteed for the first twenty years only. The Government of Denmark and Iceland will establish and maintain the meteorological stations and the expense of daily telegraphic bulletins, and will perform the hydrographic work necessary in connection with the laying of the cable, and will also guarantee an annual subvention of 5000*l.* for twenty years. Therefore, all that now remains to be done in order to secure telegraphic communication with Iceland for commercial and meteorological purposes is to secure the remaining annual income of 8500*l.* It is hoped that a large portion and perhaps all of this may be secured by national legislation in the States of Europe and America that are interested in this subject.

IT is announced in *Science* that Mr. Charles H. Senff has given 5000 dollars to the zoological department of Columbia University for purposes of exploration and publication. Mr. Harrington and Mr. Sumner expect, with the assistance of this fund, to make a second expedition to the Nile in search of *Polypterus.* The fund will also be used for the publication of a memoir on the anatomy of *Polypterus*, to be undertaken conjointly by Messrs. Dean, Harrington, McGregor, Strong, Herrick and Prof. Wheeler, of the University of Chicago.

THE inaugural lecture on the possibility of extirpating malaria from certain localities by a new method, delivered by Major Ronald Ross at the Liverpool School of Tropical Medicine, is published in the *British Medical Journal.* According to Major Ross's observations in India, human malaria is not conveyed by mosquitos of the genus Culex, but by members of the genus Anopheles. Species of the former genus are generally able to breed in pots and tubs of water, cisterns, wells, and drains—that is, they seem to prefer artificial collections of water of this character to natural collections, such as rainwater, puddles, and ponds. In the case of the other genus, Anopheles, however, the larvæ are scarcely ever to be found in vessels and other artificial collections of water, but only in natural ponds and puddles. But whether the dangerous mosquitos prove to be confined to the genus Anopheles or not, it appears certain that they breed in puddles, and are not of the common domestic kind. The practicability of eradicating malaria in a locality by the extermination of the dangerous mosquitos in it thus depends on a single question—Do these mosquitos breed in spots sufficiently isolated and rare to be dealt with by public measures of repression? It is to obtain information upon this subject that an expedition to the West African coast is being organised. If it can be shown by accurate investigation that all the malaria in a large town arises from a few small puddles which can be obliterated at small expense, the value of the discovery could not easily be over-estimated.

THE *Meteorologische Zeitschrift* for June contains a brief note of the results of some important observations made by Dr. J. Tuma in seven balloon ascents, for the purpose of obtaining measurements of the distribution of atmospheric electricity in clear weather, and of determining whether the balloon itself received electrical charges. The first question is of purely scientific importance, and the second is of practical interest, as lately the burning of some balloons has been attributed to electrical discharges. The observations show that the positive potential decreases with increasing height; the positive charges are, therefore, accumulated in the lower strata of the atmosphere. During the four last ascents, Dr. Tuma was unable to find that the balloons were electrically charged. The details of the investigation were published in the *Sitzungsberichte* of the Vienna Academy in March last.

SO many attempts have been made to produce photographic pictures in natural colours, that a bibliography of recent contributions to the subject is distinctly valuable. Mr. Philip E. B. Jourdain gives such a bibliography in *Photography* of June 22. His paper supplements similar bibliographies prepared by Mr. Bolas, the chief additions being a fuller account of Edmond Becquerel's work, and abstracts of two important papers by Clerk Maxwell and Lord Rayleigh on different branches of the subject. A number of processes, in addition to those known to most men of science, are described. The bibliography carries the subject to the end of 1898, so Mr. R. W. Wood's process (see p. 119) is not included.

THE property that the locus of the poles of an arbitrary plane with respect to the conics of a Steiner's surface is another Steiner's surface has been investigated by Lie, Koenigs, and Brambilla. In a communication to the *Rendiconto* of the Naples Academy (v. 4), Prof. Domenico Montesano has dealt with the following questions connected with this problem:—(1) In what relation of position are the two surfaces? (2) Whether the relation is invertible? (3) What forms are described by the double lines, the triple point, and the double tangent planes of the new Steiner's surface when the arbitrary plane is varied? In order to answer these questions, Prof. Montesano examines the correlative questions for the surface of the third order with four double points, making these depend on other more general questions relating to a surface of the third order without singularities.

IN the *Bulletin international* of the Cracow Academy, M. P. Rudski applies the well-known problem of the elastic sphere under given surface-tractions to calculate the radial displacements of the earth's surface under the weight of ice-caps. There are strong reasons for believing that during the glacial period large areas of land were submerged, which at the present time are at considerable altitudes above the sea-level, and M. Rudski's object is to test whether these displacements of the shore-line can be accounted for by the distortion of the earth due to circumpolar ice, assuming the total quantity of water on the earth's surface to be constant. M. Rudski considers the test case of uniform ice-caps extending down to latitude 60°, and he assumes the rigidity of the earth to be the same as that of steel. The deformations are different according to whether glaciation exists about one or both poles, the depressions at the poles being respectively 347·1 and 497·8 metres for an ice-cap 2000 metres thick. Moreover, with bipolar glaciation the displacement of the shore at the edge of the ice-caps is negative, while with unipolar glaciation it is positive but smaller. In either case, supposing fiords to extend inwards into the ice-caps, the shore-displacements towards the centre of the caps would be positive.

IT is well known that the influence of a magnetic field in general increases the electric resistance of the rarefied gases, except when the lines of electric and magnetic force coincide. Profs. Elster and Geitel, writing in the *Verhandlungen* of the German Physical Society, describe an experiment showing that a magnetic field has a similar effect on the conductivity imparted to air by the influence of Becquerel rays. Experiments have also been made by the same writers, showing that the observed results were not attributable to any deviation produced in the rays by the magnet, but that Becquerel rays, like Röntgen rays, possess the property of not being deflected by magnetic force.

IN the last number of the *Zeitschr. Wiss. Zool.*, Mr. L. Johann notices certain peculiar epidermal structures occurring at the base of the spines of one of the spiny dog-fishes (*Spinax niger*), which he believes to be luminiferous. They take the form of brown or black spots, which are not shining, and are situated on a dark ground. Although distinctly visible to the naked eye, they are seen better through a lens; and, owing to the nature of the skin, are more clearly displayed in the embryo than in the adult. When sectionised and examined microscopically, they are found to contain pigment. A tropical representative of the same family (*Isistius brasiliensis*) is already known to possess luminiferous properties, and the author therefore considers that the spots in the Mediterranean species have the same function. By a fortunate coincidence, as his paper was passing through the press, Mr. Johann received a communication from Dr. Beer, of the Zoological Station at Naples, stating that a specimen of *Spinax niger* had recently been captured and brought to the aquarium there. Although wounded and in a generally feeble condition, it emitted a distinct luminosity, which would doubtless have been stronger had the fish been in robust health. The author's conclusions as to the function of the dermal spots are, therefore, demonstrated by actual experiment to be correct.

STUDENTS of the Batrachians will be much interested to read in the *Proc. U.S. Nat. Mus.* Dr. Stejneger's account of the discovery of a North American representative of the family of disc-tongued frogs (*Discoglossidae*), hitherto supposed to be confined to the northern half of the Old World and New Zealand. The determination rests on a single specimen discovered in the western portion of Washington State, which is considered to belong to a new generic type (*Ascaphus*).

THE July number of the *Century Magazine* contains an exceedingly well-written and well-illustrated article describing a rocky islet in the Gulf of St. Lawrence known as "Bird Rock," and now utilised as a lighthouse station. From the accounts of early visitors to the rock (among whom was Audubon) it appears that the number of sea-birds—such as gannets, guillemots, puffins, razorbills and petrels, with which it was covered—was almost incredible, Dr. Bryant, who paid a visit in 1860, estimating the number of gannets alone at one hundred and fifty thousand. Although, to one who has not read the old accounts, the rock would even at the present day appear a marvellous example of the exuberance of bird-life, it is only too certain that unchecked plunder of the eggs and destruction of the adults are steadily tending towards the extermination of the feathered hosts. By all means, therefore, let the Government concerned forthwith take the simple steps suggested by the author as essential to ward off the occurrence of such a dire calamity.

THE useful series of "Manchester Museum Handbooks" has received an important addition in the form of an "Index to the *Systema Naturae* of Linnæus," by Mr. C. D. Sherborn. Needless to say, this work is executed with the thoroughness and care characterising all the efforts of its author. Whether, however, it will "help in bringing about that uniformity of nomenclature which is the great need of zoological science at the present day," the future alone will show. There may also be two opinions as to whether Linnæus, the founder of our nomenclature, "had no more power to alter a name once founded than has any other person."—The "Guide to the Natural History Collections" in the same series is so well written, and contains such a large amount of information in such a very small compass, that it will prove useful to many besides actual visitors to the museum.

Slowly but surely is our information as to the former extension of the range of the Saiga antelope of the Volga steppes tending towards completeness. The latest addition to the remains of this animal is a skull from the superficial deposits of Kulm, recently added to the museum at Dantzic. This specimen, which has been identified by Dr. A. Nehring, is the second hitherto obtained in Germany. As our readers may remember, an imperfect skull was dug up a few years ago near Twickenham.

To the last number of the *Proceedings* of the Royal Physical Society of Edinburgh Messrs. W. S. Bruce and W. Eagle Clarke communicate a paper on the mammalia and birds of Franz-Josef Land. That such a desolate region would have but few land mammals was only to be expected, and the Polar bear and Arctic fox are the only two actually met with, although there are reports as to the occurrence of a hare, and the reindeer is represented by accumulations of its antlers, which were probably carried to their present position years ago by ice-floes. On the other hand, the birds number at least two-and-twenty species.

Mr. F. Turner reprints, from the *Proceedings* of the Australasian Association for the Advancement of Science, a paper on the supposed poisonous plants of South Australia.

The most recent numbers received of the *Biologisches Centralblatt* contain a continuation of Dr. Keller's useful epitome of the results of recent researches in vegetable physiology and biology, as well as several original papers in different departments of zoology and botany.

We learn, from an article in the *Board of Trade Journal* for June, that the source of the india-rubber exported from Peru through Pará has been determined by M. Hubert, a botanist on the scientific staff of the Museum of Pará, to be a species of *Castilloa*, possibly identical with the *Castilloa elastica* of Central America.

The *Transactions* of the British Mycological Society for 1897–1898 contain several interesting papers on British Mycology, but some of them are (admittedly) reprints, and, with regard to the others, there is no information as to the date or place where they were read, or even any note of the meetings of the Society. No date even is given to the delivery of the "President's Address." The officers of the Society appear to be a President, an "Acting President," and an Honorary Secretary and Treasurer.

We have received vol. i. No. 3 of the Communicaciones del Museo Nacional de Buenos Aires. It contains a paper on the Coleoptera of Tierra del Fuego, and some short articles on botany, geology and nomenclature.

An important paper, by Dr. Philip P. Calvert, on Odonata from Tepic, Mexico, with supplementary notes on those of Baja, California, has appeared in the *Proceedings* of the California Academy of Sciences (third series, Zoology, vol. i. No. 12). Detailed descriptions are given of many of the species.

The thirteenth volume (new series) of the *Geographical Journal*, containing the six numbers of the *Journal* issued this year, has just been published. The papers printed in the volume; the record of geographical events and investigations; and the monthly bibliography of current geographical literature, make the volume, like previous ones, essential to the library of the student of geography.

The second part of the first volume of the *Annals* of the South African Museum has reached us. Among the papers included in it are: a descriptive list of the rodents of South Africa, by Mr. W. L. Sclater; a further contribution to the South African Coleopterous fauna, by Mr. L. Péringuey; the South African species of Peripatidæ in the collection of the South African Museum, by Dr. W. F. Purcell; and a description of a new genus of Perciform fishes from the Cape of Good Hope, by Mr. G. A. Boulenger, F.R.S.

A third edition, considerably enlarged, of "Metal-Plate Work," by Mr. C. T. Millis, has been published by Messrs. E. and F. N. Spon, Ltd. The volume shows how nearly all the patterns required by sheet-metal-workers can be set out on general geometrical principles. The book has proved of great value to pattern-makers since it was first published twelve years ago, and as the system of construction set forth in it is now regarded as the best means of making the practical man familiar with the geometrical principles underlying his work, the volume should be even more widely used in the future than it has been in the past.

The additions to the Zoological Society's Gardens during the past week include a Common Paradoxure (*Paradoxurus niger*) from Java, presented by Mr. J. Osborne; a Barbary Mouse (*Mus barbarus*) from Barbary, presented by Miss Lyell; a Cormorant (*Phalacrocorax carbo*) from Scotland, presented by Mr. Percy Leigh Pemberton; two Carrion Crows (*Corvus corone*), British, presented by Lieut.-Colonel Vilett Rolleston; a Rock Thrush (*Monticola saxatilis*), European, a Yellow Hangnest (*Cassicus persicus*) from South America, presented by Mr. H. J. Fulljames; twelve African Walking Fish (*Periopthalmus koelreuteri*) from West Africa, presented by Dr. H. O. Forbes; a Brown Mouse Lemur (*Chirogaleus milii*), two Elegant Galidias (*Galidia elegans*) from Madagascar, a Red-bellied Tamarin (*Midas labiatus*) from the Upper Amazons, two Mexican Conures (*Conurus holochlorus*) from Mexico, a Tabuan Parrakeet (*Pyrrhulopsis tabuensis*) from the Fiji Islands, deposited; a Wapiti Deer (*Cervus canadensis*, ♂), a Great Eagle Owl (*Bubo maximus*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

Comet 1899 *a* (Swift).—This comet, after passing perihelion, showed such a definite increase of brightness and other evidence of internal action, that its progress was closely watched at several observatories (*Astronomical Journal*, No. 464, vol. xx. pp. 60–61). Prof. E. E. Barnard, observing it on May 20 and several succeeding occasions, with the 40-inch refractor of the Yerkes Observatory, found the head of the comet to be distinctly *double*, the smaller component being *south preceding* with reference to the main body. From successive measures it was found that the position angle was gradually decreasing, while the distance between the two nuclei was increasing from 28″·84 on the 20th to 38″·16 on the 23rd. Though no tail was visible to the eye, a photograph obtained on May 18 showed a slender tail 6° or 8° long.

Prof. C. D. Perrine also secured several observations with the 36-inch Lick refractor, confirming the duplex character of the head of the comet. The two nuclei were estimated to be of the 8·0 and 9·5 magnitude respectively, and neither appeared stellar with power of 270.

The following continued ephemeris is given by Dr. A. Stichtenoth in *Astr. Nach.* (Bd. 149, No. 3574):—

Ephemeris for 12*h. Berlin Mean Time.*

1899.	R.A.	Decl.	Br.
	h. m. s.	° ′	
July 6	14 16 54	+17 16·5	0·11
8	15 29	16 12·6	
10	14 20	15 13·0	0·08
12	13 26	14 17·3	
14	12 43	13 24·9	0·06
16	12 12	12 35·6	
18	11 52	11 49·2	0·05
20	14 11 40	+11 5·2	